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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,190	06/26/2003	Pierre J. Arquin	59489-8022.US02	5423

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EXAMINER	
GREENE, JASON M	
ART UNIT	**PAPER NUMBER**
1724	

DATE MAILED: 11/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/607,190	ARQUIN ET AL.	
	Examiner	Art Unit	
	Jason M. Greene	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 June 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to because the views have not been numbered in consecutive Arabic numerals. Specifically, the views are numbered as 1, 2A-2E, 6, and 7. It appears as though Applicants inadvertently omitted Figures 3-5. See 37 CFR 1.84(u)(1). Correction is required.

2. The drawings are objected to because the view numbers are not preceded by the abbreviation "FIG.". See 37 CFR 1.84(u)(1). Correction is required.

Claim

3. With regard to claim4, the Examiner suggests Applicants rewrite the word "nickle" in line 2 as "nickel" to correct an apparent typographical error.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 4, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Snow et al. in view of Briesacher et al.

With regard to claim 1, Snow et al. teaches a gas purification system providing sorption and particulate filtering comprising a sorption material, a particulate filtering device, and an enclosure having an inlet and an outlet, said enclosure housing said sorption material and said particulate filter device, said sorption material proximal to said inlet, said filter device proximal to said outlet, said sorption material and said particulate filter device arranged within said enclosure such that a gas flowing into said enclosure via said inlet and out of said enclosure via said outlet must follow a flow path first contacting said sorption material and then flowing through the particulate filtering device being well known in col. 2, line 3 to col. 3, line 19.

Snow et al. does not disclose the sorption material housed within the enclosure being a hydrogen sponge including hydrogen sorption material wherein the hydrogen sorption material can be thermally regenerated by heating said enclosure.

Snow et al. teaches hydrogen sponge including hydrogen sorption material being well known in the art in col. 2, lines 54-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the known hydrogen sorption material of Snow et al. into the known sorption and filtering enclosure of Snow et al. to provide a system

capable of removing hydrogen from inert gases, as suggested by Snow et al. in col. 2, lines 54-57. While the known sorption and filtering enclosure of Snow et al. is not explicitly disclosed as removing hydrogen, one of ordinary skill in the art would have recognized that the specific sorption material could have been replaced with any known sorption material to enable any desired component to be removed from an air stream. Snow et al. teaches that the known combined sorption and filtering devices are used to remove contaminant gases from process gases used in the semiconductor manufacturing industry. Since hydrogen is known contaminant in semiconductor manufacturing process gases (see pages 1 and 2 of the instant specification), one of ordinary skill in the art would have clearly recognized the desirability of substituting the known hydrogen sorption material for the sorption material enclosed within the combined sorption and filtering device.

Briesacher et al. discloses thermally regenerating a hydrogen sorption material by heating an enclosure housing the hydrogen sorption material in col. 7, lines 35-47.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the regeneration of Briesacher et al. into the gas purification system of Snow et al. to allow the hydrogen sorption material to be reused to reduce operating costs.

The Examiner notes that the claims allowed in the parent application include a recitation that the hydrogen is at a temperature of less than 100 degrees C. Since Snow et al. teaches the hydrogen sponge adsorbing hydrogen at 700-900 degrees C, Snow et al. teaches away from the temperature range recited in the parent application.

However, in the instant application the temperature at which the system operates is not recited. Therefore, the hydrogen sponges taught by Snow et al. are seen as being within the scope of the hydrogen sponges recited in claim 1. Additionally, the limitation that the hydrogen sorption material can be thermally regenerated by heating said enclosure has been interpreted to mean that the hydrogen sorption material can be thermally regenerated by heating the enclosure to any temperature between the adsorbing temperature and the melting point of the hydrogen sponge. Therefore, since Briesacher et al. discloses thermally regenerating a hydrogen sorption material by heating an enclosure housing the hydrogen sorption material, one of ordinary skill in the art would have recognized that the hydrogen sponge could have been regenerated by heating the enclosure to a temperature between 900 degrees C and the melting point of the hydrogen sponge.

With regard to claims 2 and 4, Snow et al. discloses the particulate filtering device being manufactured from sintered nickel in col. 2, lines 3-28.

With regard to claim 8, Snow et al. discloses the hydrogen sorption material being an alloy of zirconium, nickel, and titanium in col. 3, lines 1-2.

With regard to claim 9, Snow et al. discloses the hydrogen sorption material being a non-evaporative getter alloy of zirconium-vanadium-iron in col. 2, line 54 to col. 3, line 5.

6. Claims 3, 5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Snow et al. and Briesacher et al. as applied to claim 1 above, and further in view of Davis.

With regard to claim 3, Snow et al. does not explicitly disclose the particle filtering device being substantially capable of removing particles from the outlet gas flow as small as 0.003 micron.

Davis discloses a similar particle filtering device capable of removing 99.999999 percent of particles having a diameter of 0.1 micron in col. 4, line 23 to col. 5, line 25.

Since the particulate filter device of Davis is capable of removing 99.9999999 percent of particles having a diameter of 0.1 micron, one of ordinary skill in the art at the time the invention was made would have expected the particle filtering device of Davis to be at least capable of removing some particles from the outlet gas flow as small as 0.003 micron.

Furthermore, Davis teaches varying the diameter of the sintered together particles to adjust the collection efficiency of the particle filtering device in col. 5, lines 39-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the diameter of the sintered together particles of Davis to allow the particle filtering device to be used to collect particles having a smaller diameter.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the particle filtering device of Davis into the gas purification system of Snow et al. and Briesacher et al. to provide a high efficiency particle filtering device capable of withstanding high operating temperatures.

With regard to claim 5, Snow et al. and Briesacher et al. do not disclose the particulate filtering device being comprised of a plurality of filtering elements.

Davis discloses the particulate filtering device being comprised of a plurality of filtering elements in col. 4, lines 7-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the plurality of filtering elements of Davis into the gas purification system of Snow et al. and Briesacher et al. to provide the desired efficiency, as suggested by Davis in col. 4, lines 7-12.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to duplicate the downstream filtering device of Snow et al. in that duplicating parts for a multiplied effect is merely a choice of design. See St. Regis Paper Co. v. Bemis Co., Inc., 193 USPQ 8, 11.

With regard to claim 7, Snow et al. and Briesacher et al. do not explicitly disclose the filtering element being a disk shape.

Davis discloses the filtering element being a disk shape in col. 5, lines 26-28.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disk shaped filter element of Davis into the gas purification system of Snow et al. and Briesacher et al. to allow the filter elements to be economically housed within a standard cylindrical enclosure.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Snow et al., Briesacher et al., and Davis as applied to claim 5 above, and further in view of Whitlock et al.

Snow et al., Briesacher et al., and Davis do not disclose the filtering element having a conical shape.

Whitlock discloses a similar sintered metal filter having a conical shape in col. 2, line 66 to col. 3, line 11.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the conical filter shape of Whitlock et al. into the system of Snow et al., Briesacher et al., and Davis to increase the surface area of the filter available to the gas stream, as is well known in the art.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the shape of the filter element of Snow et al., Briesacher et al., and Davis in that such is merely a choice of design. See In re Dailey et al., 149 USPQ 47.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Snow et al. and Briesacher et al. as applied to claim 1 above, and further in view of Bourne et al.

Snow et al. and Briesacher et al. do not disclose the gas purification system further comprising a temperature measuring device, the temperature measuring device being placed within the hydrogen sorption material.

Bourne et al. discloses using a temperature measuring device to measure the temperature inside a hydrogen sorption material in col. 6, lines 37-45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the temperature measuring device of Bourne et al. into the system of Snow et al. and Briesacher et al. to allow the temperature of the getter material to be controlled, as suggested by Bourne et al. in col. 6, lines 37-45.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (703) 308-6240. The examiner can normally be reached on Tuesday - Friday (7:00 AM to 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (703) 308-1261. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jason M. Greene
Examiner
Art Unit 1724

jmg
November 20, 2003

DUANE SMITH
PRIMARY EXAMINER
11-21-03